

---

# ARCHIVES OF ORAL BIOLOGY

VOLUME 42, 1997

VOLUME CONTENTS AND  
AUTHOR INDEX



PERGAMON

# ARCHIVES OF ORAL BIOLOGY

## EDITORS-IN-CHIEF

**Dr D. B. FERGUSON**, University of Manchester, School of Biological Sciences, 3.239 Stopford Building, Oxford Road, Manchester M13 9PT, U.K.

**Dr G. R. HOLLAND**, Department of Cariology, Restorative Sciences and Endodontics, School of Dentistry, The University of Michigan, 1011 N. University, Ann Arbor, MI 48109-1078, U.S.A.

## ACCEPTING EDITORS

**Dr S. HAMADA**, Department of Oral Microbiology, Faculty of Dentistry, University of Osaka, 1-8 Yamadaoka, Suita, Osaka 565, Japan

**Dr R. ORCHARDSON**, Institute of Biomedical and Life Sciences, West Medical Building, University of Glasgow, Glasgow G12 8QQ, U.K.

**Dr P. SLOAN**, Unit of Experimental Oral Pathology, Turner Dental School, University Dental Hospital of Manchester, Higher Cambridge Street, Manchester M15 6FH, U.K.

**Dr J. SODEK**, Faculty of Dentistry, University of Toronto, Ontario, Canada M5S 1A8

## ADVISORY BOARD

**W. H. BOWEN** (Rochester, U.S.A.)

**C. ROBINSON** (Leeds, U.K.)

**W. T. BUTLER** (Houston, U.S.A.)

**J. V. RUCH** (Strasbourg, France)

**M. W. J. FERGUSON** (Manchester, U.K.)

**H. E. SCHROEDER** (Opfikon, Switzerland)

**M. J. LEVINE** (Buffalo, U.S.A.)

**B. J. SESSLE** (Toronto, Canada)

**J. R. MARTINEZ** (San Antonio, U.S.A.)

**T. ZELLES** (Budapest, Hungary)

**C. E. NORD** (Stockholm, Sweden)

Editorial Assistant: **Dr M. EDWARDS**

## AIMS AND SCOPE

The *Archives of Oral Biology* publishes papers concerned with advances in knowledge of every aspect of the oral and dental tissues and bone over the whole range of vertebrates, whether from the standpoint of anatomy, bacteriology, biophysics, chemistry, DNA biotechnology, epidemiology, genetics, immunology, molecular biology, palaeontology, pathology, physiology or otherwise.

**Author Service Department:** For queries relating to the general submission of articles (including electronic text and artwork) and the status of accepted manuscripts, please contact the Author Service Department. [E-mail: [authors@elsevier.co.uk](mailto:authors@elsevier.co.uk); Fax: +44 (0) 1865 843900].

**Publishing Office:** Elsevier Science Ltd, Bampfylde Street, Exeter EX1 2AH, U.K. [Tel. Exeter +44 (0)1392 251558; Fax +44 (0)1392 425370]. **Production Editors:** Deborah Barrett and Linsey Burbury

Annual Institutional Subscription Rates 1998: Europe, The CIS and Japan 2840 Dutch Guilders. All other countries US\$1632. Associated Personal Subscription Rates are available on request for those whose institutions are library subscribers. Dutch Guilder prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice. For orders, claims, product enquiries (no manuscript enquiries) please contact the Customer Support Department at the Regional Sales Office nearest to you: **The Americas:** Elsevier Science, Customer Support Department, PO Box 945, New York, NY 10010, U.S.A. [Tel: (+1) 212-633-3730/1-888 4ES-INFO. Fax: (+1) 212-633-3680. e-mail: [usinfo-f@elsevier.com](mailto:usinfo-f@elsevier.com)]. **Japan:** Elsevier Science Customer Support Department, 9-15 Higashi-Azabu 1-chome, Minato-ku, Tokyo 106, Japan [Tel: (+81) 3-5561-5033. Fax (+81) 3-5561-5047. e-mail: [info@elsevier.co.jp](mailto:info@elsevier.co.jp)]. **Asia Pacific (excluding Japan):** Elsevier Science (Singapore) Pte Ltd, No. 1 Temasek Avenue, 17-01 Millenia Tower, Singapore 039192 [Tel: (+65) 434-3727. Fax: (+65) 337-2230. e-mail: [asiainfo@elsevier.com.sg](mailto:asiainfo@elsevier.com.sg)]. **Rest of the World:** Elsevier Science Customer Service Department, PO Box 211, 1001 AE Amsterdam, The Netherlands [Tel: (+31) 20-485-3757. Fax: (+31) 20-485-3432. e-mail: [nlinfo-f@elsevier.nl](mailto:nlinfo-f@elsevier.nl)].

**Back Issues:** Back issues of all previously published volumes are available direct from Elsevier Science Offices. Complete volumes and single issues can be purchased for 1992-1996. Earlier issues are available in high quality photo-duplicated copies as complete volumes only.

© 1998 Elsevier Science Ltd. All rights reserved

PERIODICALS POSTAGE PAID AT RAHWAY, NEW JERSEY. *Archives of Oral Biology* (ISSN 0003-9969) is published monthly, by Elsevier Science Ltd., The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. The annual subscription in the U.S.A. is \$1632. *Archives of Oral Biology* is distributed by Mercury Airfreight International Ltd., 2323 Randolph Avenue, Avenel, NJ 07001-2413, U.S.A. **POSTMASTER:** Please send address changes to *Archives of Oral Biology*, c/o Elsevier Science RSO, Customer Support Department, 655 Avenue of the Americas, New York, NY 10010, U.S.A. [Tel: (+1) 212-633-3730/1-888 4ES-INFO. Fax: (+1) 212-633-3680. e-mail: [usinfo-f@elsevier.com](mailto:usinfo-f@elsevier.com)].

## LIST OF CONTENTS

### NUMBER 1

K. R. AGRAWAL, P. W. LUCAS, J. F. PRINZ and I. C. BRUCE	Mechanical properties of foods responsible for resisting food breakdown in the human mouth	1
J. PAPHANGKORAKIT and J. W. OSBORN	The effect of pressure on a maximum incisal bite force in man	11
S. KINDER HAAKE and XIURONG WANG	Cloning and expression of <i>fomA</i> , the major outer-membrane protein gene from <i>Fusobacterium nucleatum</i> T18	19
CHIH-KO YEH, M. W. J. DODDS, PENGOU ZUO and D. A. JOHNSON	A population-based study of salivary lysozyme concentrations and candidal counts	25
K. E. BYRD	Characterization of brux-like movements in the laboratory rat by optoelectronic mandibular tracking and electromyographic techniques	33
J. D. VAN WILLIGEN, E. OTTEN, G. E. C. SLAGER and M. L. BROEKHUISEN	Contribution of the digastric muscles to the control of bite force in man	45
T. MOMOSE, J. NISHIKAWA, T. WATANABE, Y. SASAKI, M. SENDA, K. KUBOTA, Y. SATO, M. FUNAKOSHI and S. MINAKUCHI	Effect of mastication on regional cerebral blood flow in humans examined by positron-emission tomography with $^{15}\text{O}$ -labelled water and magnetic resonance imaging	57
S. ROTH, K. MÜLLER, D.-C. FISCHER and K.-H. DANNHAUER	Specific properties of the extracellular chondroitin sulphate proteoglycans in the mandibular condylar growth centre in pigs	63
<b>Short Communications</b>		
A. W. BARRETT and A. M. H. RAJA	The immunohistochemical identification of human oral mucosal melanocytes	77
E. M. LOSSO, J. M. SINGER and J. NICOLAU	Effect of gustatory stimulation on flow rate and protein content of human parotid saliva according to the side of preferential mastication	83
A. J. SMITH, W. WADE, M. ADDY and G. EMBERY	The relationship between microbial factors and gingival crevicular fluid glycosaminoglycans in human adult periodontitis	89

### NUMBER 2

A. M. POFF, E. I. F. PEARCE, M. J. LARSEN and T. W. CUTRESS	Human supragingival <i>in vivo</i> calculus formation in relation to saturation of saliva with respect to calcium phosphates	93
K. G. BABAAMHDY, P. D. MARSH, S. J. CHALLACOMBE and H. N. NEWMAN	Variations in the predominant cultivable microflora of dental plaque at defined subsites on approximal tooth surfaces in children	101
N. SUGITA, Y. MATSUKI, H. YOSHIE and K. HARA	Characterization of complement receptor type 1 and type 3 mRNA expression on polymorphonuclear leucocytes (neutrophils) in gingival crevicular fluid from periodontitis-affected patients	113
K. S. TÜRKER, J. YANG and P. BRODIN	Conditions for excitatory or inhibitory masseteric reflexes elicited by tooth pressure in man	121
G. S. GRIFFITHS, J. M. A. WILTON and M. A. CURTIS	Permeability of the gingival tissues to IgM during an experimental gingivitis study in man	129
J. ASTBÄCK, K. ARVIDSON and O. JOHANSSON	An immunohistochemical screening of neurochemical markers in fungiform papillae and taste buds of the anterior rat tongue	137
J. T. WRIGHT, K. I. HALL and M. YAMAUCHI	The enamel proteins in human amelogenesis imperfecta	149
G. E. WATSON, L. R. LATCHNEY, WEIHUA LUO, A. R. HAND and D. J. CULP	Biochemical and immunological studies and assay of rat sublingual mucins	161

K. R. ETZEL, J. D. HEMPEL and R. R. KOEPSIEL	Identification of zinc proteins in rat parotid saliva	173
J. KLIMEK, M. JUNG and S. JUNG	Interindividual differences in degradation of sodium monofluorophosphate by saliva in relation to oral health status	181
<b>Short Communication</b>		
M. HORIUCHI, T. ICHIKAWA, M. NODA and N. MATSUMOTO	Use of interimplant displacement to measure mandibular distortion during jaw movements in humans	185
Conference Announcement		
Instructions to Contributors		

## NUMBER 3

K. LUUKKO	Immunohistochemical localization of nerve fibres during development of embryonic rat molar using peripherin and protein gene product 9.5 antibodies	189
N. TAKAI, Y. YOSHIDA, T. SHIDA, E. KONDO, Y. UEDA, H. KIYAMA and M. TOHYAMA	Expression of vasoactive intestinal polypeptide receptor mRNA and secretory regulation by vasoactive intestinal polypeptide in rat submandibular and sublingual salivary glands	197
S. SOMA, S. MATSUMOTO and T. TAKANO-YAMAMOTO	Enhancement by conditioned medium of stretched calvarial bone cells of the osteoclast-like cell formation induced by parathyroid hormone in mouse bone marrow cultures	205
R. JACOBS, E. HENDRICKX, I. VAN MELE, K. EDWARDS, M. VERHEUST, A. SPAEPEN and D. VAN STEENBERGHE	Control of a trackball by the chin for communication applications, with and without neck movements	213
N. CASSIDY, M. FAHEY, S. S. PRIME and A. J. SMITH	Comparative analysis of transforming growth factor- $\beta$ isoforms 1–3 in human and rabbit dentine matrices	219
T. KAWAGUCHI, S. MURAI, H. SAITO and T. ITOH	Changes in the noradrenaline and acetylcholine content of three major salivary glands and in the salivation and protein component patterns of whole saliva in chronically isoprenaline-administered mice	225
P. M. COLLIER, J. J. SAUK, J. ROSENBLUM, Z. A. YUAN and C. W. GIBSON	An amelogenin gene defect associated with human X-linked amelogen- esis imperfecta	235
T. ATTIN, U. KOIDL, W. BUCHALLA, H. G. SCHALLER, A. M. KIELBASSA and E. HELLWIG	Correlation of microhardness and wear in differently eroded bovine dental enamel	243
<b>Short Communication</b>		
T. WATANABE, K. KOBAYASHI, T. SUZUKI, H. KUMAGAI, K. ICHIKAWA, T. KYU, I. SATO and M. NAGAO	Development of a recording system for saliva pH with a complete denture by telemetry	251

## NUMBER 4

M. SOORY and S. AHMAD	5 $\alpha$ -Reductase activity in human gingiva and gingival fibroblasts in response to bacterial culture supernatants, using [ $^{14}$ C]4-androstene- dione as substrate	255
F. TANAKA, N. OGURA and Y. ABIKO	Stimulation of plasminogen activator/plasmin system in gingival fibroblast cells by oxygen radicals	265
R. B. JOHNSON and J. S. HENDERSON	Enhancement by sodium orthovanadate of the formation and mineralization of bone nodules by chick osteoblasts <i>in vitro</i>	271
M. REDLICH, Z. GREENFELD H. COOPERMAN, S. PISANTY and S. SHOSHAN	Lack of influence of cyclosporin A on levels of gingival procollagen types I and III mRNAs in rats of different ages	277

Y. MANABE, R. ITO, Y. KITAGAWA,  
J. OYAMADA, A. ROKUTANDA,  
S.-Y. NAGAMOTO, S. KOBAYASHI  
and K. KATO 283

J. CAMPS, S. GIUSTINIANI, J. DEJOU and  
J. C. FRANQUIN

T. BÄCKMAN and M. A. LARMAS

R. MOROI, T. YAMAZA, T. NISHIURA,  
Y. NISHIMURA, Y. TERADA, K. ABE,  
M. HIMENO and T. TANAKA

P. L. ROSALEN, W. H. BOWEN  
and S. K. PEARSON

**Short Communications**

P. MAILLOU and S. W. CADDEN

L. BJØRN DAL, T. DARVANN,  
M. BRO-NIELSEN, R. LARSEN and  
A. THYLSTRUP

Non-metric tooth crown traits of the Thai, Aka and Yao tribes of Northern Thailand 283

Low versus high pressure for *in vitro* determination of hydraulic conductance of human dentine 293

Chronic metabolic alkalosis, sucrose diet and dentine formation in young rats 299

Immunocytochemical study of cathepsin L and rat salivary cystatin-3 in rat osteoclasts treated with E-64 *in vivo* 305

Influence of fluoride co-cystallized with sugar on caries development in desalivated rats 317

Effects of remote deep somatic noxious stimuli on a jaw reflex in man 323

Automated image analysis applied to the odontoblast-predentine region in undemineralized sections of human permanent third molars 329

**NUMBER 5**

M. A. ONOFRE, L. B. DE SOUZA,  
A. CAMPOS JR and R. TAGA

G. E. WISE and L. ZHAO

G. D. SINGH, J. A. McNAMARA JR  
and S. LOZANOFF

G. D. SINGH, B. J. MOXHAM,  
M. S. LANGLEY and G. EMBERY

V. F. FERRARIO, C. SFORZA  
and A. MIANI JR

S. D. SCUTTER, K. S. TÜRKER  
and J. YANG

J. C. MIGUEL, W. H. BOWEN  
and S. K. PEARSON

Y. CAM, H. LESOT, P. COLOSETTI  
and J. V. RUCH

Y. TOJO, A. TANIMURA, S. MATSUI  
and Y. MATSUMOTO

A. ONDARZA, L. JARA, P. MUÑOZ  
and R. BLANCO

Stereological study of acinar growth in the rat parotid gland induced by isoproterenol 333

Immunostaining and transcriptional enhancement of interleukin-1 receptor type I in the rat dental follicle 339

Spline analysis of the mandible in human subjects with class III malocclusion 345

Glycosaminoglycan biosynthesis during 5-fluoro-2-deoxyuridine-induced palatal clefts in the rat 355

Statistical evaluation of Monson's sphere in healthy permanent dentitions in man 365

A new method for eliciting and studying H-reflexes in the human masseter 371

Effects of iron salts in sucrose on dental caries and plaque in rats 377

Distribution of transforming growth factor- $\beta_1$ -binding proteins and low-affinity receptors during odontoblast differentiation in the mouse 385

Effects of extracellular ATP on cytosolic  $Ca^{2+}$  concentration and secretory responses in rat parotid acinar cells 393

Sequence of eruption of deciduous dentition in a Chilean sample with Down's Syndrome 401

**NUMBER 6**

E. B. JACOBSEN and K. J. HEYERAAS

Pulp interstitial fluid pressure and blood flow after denervation and electrical tooth stimulation in the ferret 407

S. ALALUUSUA, L. GRÖNROOS, X. ZHU,  
M. SAARELA, J. MÄTTÖ, S. ASIKAINEN  
and K. FUKUSHIMA

Production of glucosyltransferases by clinical mutans streptococcal isolates as determined by semiquantitative cross-dot assay 417

B. PERETZ, N. NEVIS and P. SMITH

Morphometric variables of developing primary maxillary first molar crowns in humans 423

J. B. PALMER, K. M. HIEMAE and J. LIU	Tongue-jaw linkages in human feeding: a preliminary videofluorographic study	429
S. P. MACAULEY, R. W. TARNUZZER, G. S. SCHULTZ, N. CHEGINI, G. E. OXFORD and M. G. HUMPHREYS-BEHRE	Extracellular-matrix gene expression during mouse submandibular gland development	443
K. OCHI, I. SAITO, K. HANADA and T. MAEDA	Expression of TrkB-like immunoreactivity in non-neuronal cells of rat periodontal ligament	455
<b>Short Communication</b> T. KURACHI, H. NAGAO, H. NAGURA and S. ENOMOTO	Effect of a titanium surface on bone marrow-derived osteoblastic cells <i>in vitro</i>	465

## NUMBER 7

R. SAS and C. DAWES	The intra-oral distribution of unstimulated and chewing-gum-stimulated parotid saliva	469
M. J. LARSEN and E. I. F. PEARCE	A computer program for correlating dental plaque pH values, $\text{cH}^+$ , plaque titration, critical pH, resting pH and the solubility of enamel apatite	475
T. TOYONO, M. NAKASHIMA, S. KUHARA and A. AKAMINE	Temporal changes in expression of transforming growth factor- $\beta$ superfamily members and their receptors during bovine preodontoblast differentiation <i>in vitro</i>	481
M. M. BASHIR, W. R. ABRAMS and J. ROSENBLUM	Molecular cloning and characterization of the bovine tuftelin gene	489
R. S. HOBSON and A. D. BEYNON	Preliminary quantitative microradiography study into the distribution of bone mineralization within the basal bone of the human edentulous mandible	497
K. KAWASAKI, Y. SAEKI and Y. OHNUKI	Effect of an increase in occlusal vertical dimension on the rate of cyclic actin-myosin interaction in guinea-pig masseter muscle	505
B. H. SEN, K. E. SAFAVI and L. S. W. SPÅNGBERG	Colonization of <i>Candida albicans</i> on cleaned human dental hard tissues	513
<b>Short Communication</b> K. KATO, H. NAKAGAKI, Y. TAKAMI, S. TSUGE, S. ANDO and C. ROBINSON	A method for determining the distribution of fluoride, calcium and phosphorus in human dental plaque and the effect of a single <i>in vivo</i> fluoride rinse	521

## NUMBER 8

Y. NAM, G. MADAPALLIMATTAM, L. DRZYMALA and A. BENNICK	Characterization of human sublingual-gland protein kinase by phosphorylation of a peptide related to secreted proteins	527
T. SAITO, T. TAKATSUKA, T. KATO, K. ISHIHARA and K. OKUDA	Adherence of oral streptococci to an immobilized antimicrobial agent	539
K. KURIHARA, N. NAKANISHI and T. UEHA	A calcium channel in human submandibular duct cell line, HSG cells, not regulated by $\text{P}_{2U}$ purinergic receptor-mediated intracellular calcium mobilization	547
M. YADAV, S. NAMBIAR, S. P. KHOO and H. B. YAACOB	Detection of human herpesvirus 7 in salivary glands	559
S. J. COOPERSTEIN and D. T. WATKINS	Calcium-calmodulin-stimulated phosphorylation of rat parotid secretion granule proteins	569
M. GRÖN, K. PIETILÄ and L. ALVESALO	The craniofacial complex in 47,XYY males	579

**Short Communication**

A. F. H. VAN NIEVELT and K. K. SMITH

Extreme bilateral molar rotation in *Monodelphis domestica* 587  
(Marsupialia: Didelphidae)**Corrigendum**

593

**NUMBER 9**

R. K. ROSE, S. P. MATTHEWS and R. C. HALL 595  
Investigation of calcium-binding sites on the surfaces of selected Gram-positive oral organisms

M. E. WATT, D. A. LUNT and W. H. GILMOUR 601  
Caries prevalence in the permanent dentition of a mediaeval population from the south-west of Scotland

Y. MITSUI, N. YASUDA, S. FURUYAMA and H. SUGIYA 621  
Nitric oxide synthase activities in mammalian parotid and submandibular salivary glands

H. KARG, E. H. BURGER, D. M. LYARUU, A. L. J. J. BRONCKERS and J. H. M. WÖLTGENS 625  
Spatiotemporal expression of the homeobox gene *S<sub>8</sub>* during mouse tooth development

J. WELLS, G. H. ZHANG and J. R. MARTINEZ 633  
Comparison of Calcium mobilization in response to noradrenaline and acetylcholine in submandibular cells of newborn and adult rats

V. GRILL, M. A. SANDRUCCI, M. BASA, R. D. LENARDA, E. DORIGO, P. NARDUCCI, A. M. MARTELLI, G. DELBELLO and R. BAREGGI 641  
The influence of dental metal alloys on cell proliferation and fibronectin arrangement in human fibroblast cultures

R. E. COHEN, G. TALARICO and B. NOBLE 649  
Phenotypic characterization of mononuclear inflammatory cells in salivary glands of bio-breeding rats

M. J. LARSEN, E. I. F. PEARCE and G. RAVNHOLT 657  
Dissolution of powdered human enamel suspended in acid solutions at a high solid/solution ratio under a 5% CO<sub>2</sub> atmosphere at 20°C

**NUMBERS 10 & 11**

S. HUANG, H. NAKAGAKI, H. OKUMURA, J. HAYASHIZAKI, M. NEGORO, K. ADACHI, S. TSUGE, S. ANDO, C. ROBINSON, E. PEARCE, A. HUANG and N. THI THANH HA 665  
Fluoride profiles in dental calculus from Japanese, Chinese and British residents

J. HASSANALI 673  
Quantitative and somatotopic mapping of neurones in the trigeminal mesencephalic nucleus and ganglion innervating teeth in monkey and baboon

E. GEMMELL, D. A. GRIECO, K. YAMAZAKI, T. NAKAJIMA and J. SEYMOUR 683  
Expression of receptor  $\beta$ -chain variable region by T cells in human periodontal disease

M. OGAWARA, K. AOKI, T. OKIJI and H. SUDA 695  
Effect of ascorbic acid deficiency on primary and reparative dentinogenesis in non-ascorbate-synthesizing ODS rats

A. M. BEAL 705  
The effect of transport-blocking drugs on secretion of fluid and electrolytes by the mandibular gland of red kangaroos, *Macropus rufus*

D. ZHOU, B. HUGHES and G. J. KING 717  
Histomorphometric and biochemical study of osteoblasts at orthodontic compression sites in the rat during indomethacin inhibition

S. Q. ALAM and Y. Y. SHI 727  
The effect of essential fatty acid deficiency on the fatty acid composition of different salivary glands and saliva in rats

K.-Y. ZEE, L. P. SAMARANAYAKE and R. ATTSTRÖM 735  
Scanning electron microscopy of microbial colonization of 'rapid' and 'slow' dental-plaque formers *in vivo*

O. CHAPARRO, W.-H. A. YU and P. A. SHAW	Effect of sympathectomy on isoproterenol-induced expression of the cysteine proteinase inhibitor gene, cystatin S, in rat submandibular glands	743
C. MARCHETTI, G. BERNASCONI and M. REGUZZONI	Presence of calcified tissue in the human temporomandibular joint disc	755
J. E. BELL, E. CUNNINGHAM, C. BELT, J. D. B. FEATHERSTONE and J. BELL	Examination of the potential structure of human salivary cystatins based on computer modelling	761
<b>Short Communications</b>		
Y. MIYAWAKI, S. H. YOUN, K. OCHI, T. MAEDA, K. KURISU and S. WAKISAKA	Calbindin D28k-like immunoreactive nerve fibres in the predentine of rat molar teeth	773
K. OCHI, K. HANADA, S. H. YOUN, S. WAKISAKA and T. MAEDA	Immunocytochemical demonstration of $\beta_1$ -subunit of $\text{Na}^+/\text{K}^+$ - ATPase in the mechanoreceptive Ruffini-like endings of the rat incisor ligament	779
R. C. HALL, G. EMBERY and D. LLOYD	Immunochemical localization of the small leucine-rich proteoglycan lumican in human predentine and dentine	783

## NUMBER 12

K. YAMAZAKI, N. SUDA and T. KURODA	Immunohistochemical localization of parathyroid hormone-related protein in developing mouse Meckel's cartilage and mandible	787
R. K. ROSE, S. J. TURNER and G. H. DIBDIN	Effect of pH and calcium concentration on calcium diffusion in streptococcal model-plaque biofilms	795
S. YAMAGUCHI, M. CHIBA, A. YAMANE, S. OHSHIMA and K. KOMATSU	Dose-response effects of adrenergic drugs on axial movements of the rat mandibular incisor and on arterial blood pressure	801
M. E. WATT, D. A. LUNT and W. H. GILMOUR	Caries prevalence in the deciduous dentition of a mediaeval population from the south-west of Scotland	811
R. DUGUID and B. W. SENIOR	The effect of fluoride on <i>Streptococcus sanguis</i> 7863 IgA1 protease production and activity	821
C.-L. HAHN and B. OVERTON	The effects of immunoglobulins on the convective permeability of human dentine <i>in vitro</i>	835
D. BEIGHTON, K. A. HOMER and J. DE GRAAFF	Endopeptidase activities of selected <i>Porphyromonas</i> spp., <i>Prevotella</i> spp. and <i>Fusobacterium</i> spp. of oral and non-oral origin	827
H. E. GOODIS, J. M. WHITE, G. W. MARSHALL JR, K. YEE, N. FULLER, L. GEE and S. J. MARSHALL	Effects of Nd: and Ho:yttrium-aluminium-garnet lasers on human dentine fluid flow and dental pulp-chamber temperature <i>in vitro</i>	845
B. G. QUE and G. E. WISE	Colony-stimulating factor-1 and monocyte chemotactic protein-1 chemotaxis for monocytes in the rat dental follicle	855
H. P. DAVEY, G. EMBERY, J. E. CREETH and D. CUMMINS	Identification of a zinc-binding cystic fibrosis antigen in human saliva by $^{65}\text{Zn}$ probing and <i>N</i> -terminal sequencing	861
J. CARLESON, P. KOGNER, I. BILEVICIUTE, E. THEODORSSON, A. APPELGREN, B. APPELGREN, S. KOPP, N. YOUSEF and T. LUNDEBERG	Effects of capsaicin in temporomandibular joint arthritis in rats	869

## AUTHOR INDEX

Abe K., 305  
 Abiko Y., 265  
 Abrams W. R., 489  
 Adachi K., 665  
 Addy M., 89  
 Agrawal K. R., 1  
 Ahmad S., 255  
 Akamine A., 481  
 Alaluusua S., 417  
 Alam S. Q., 727  
 Alvesalo L., 579  
 Ando S., 521, 665  
 Aoki K., 695  
 Appelgren A., 869  
 Appelgren B., 869  
 Arvidson K., 137  
 Asikainen S., 417  
 Astbäck J., 137  
 Attin T., 243  
 Attström R., 735

Babaahmady K. G., 101  
 Bäckman T., 299  
 Bareggi R., 641  
 Barrett A. W., 77  
 Basa M., 641  
 Bashir M. M., 489  
 Beal A. M., 705  
 Beighton D., 827  
 Bell J. E., 761  
 Bell J., 761  
 Belt C., 761  
 Bennick A., 527  
 Bernasconi G., 755  
 Beynon A. D., 497  
 Bileviciute I., 869  
 Bjørndal L., 329  
 Blanco R., 401  
 Bowen W. H., 317, 377  
 Bro-Nielsen M., 329  
 Brodin P., 121  
 Broekhuijsen M. L., 45  
 Bronckers A. L. J. J., 625  
 Bruce I. C., 1  
 Buchalla W., 243  
 Burger E. H., 625  
 Byrd K. E., 33

Cadden S. W., 323  
 Cam Y., 385  
 Campos A. Jr., 333  
 Camps J., 293  
 Carleson J., 869  
 Cassidy N., 219  
 Challacombe S. J., 101  
 Chaparro O., 743  
 Chegini N., 443

Chiba M., 801  
 Cohen R. E., 649  
 Collier P. M., 235  
 Colosetti P., 385  
 Cooperman H., 277  
 Cooperstein S. J., 569  
 Creeth J. E., 861  
 Culp D. J., 161  
 Cummins D., 861  
 Cunningham E., 761  
 Curtis M. A., 129  
 Cutress T. W., 93

Dannhauer K.-H., 63  
 Darvann T., 329  
 Davey H. P., 861  
 Dawes C., 469  
 de Graaff J., 827  
 de Souza L. B., 333  
 Dejou J., 293  
 Delbello G., 641  
 Dibdin G. H., 795  
 Dodds M. W. J., 25  
 Dorigo E., 641  
 Drzymala L., 527  
 Duguid R., 821

Edwards K., 213  
 Embery G., 89, 355, 783, 861  
 Enomoto S., 465  
 Etzel K. R., 173

Fahey M., 219  
 Featherstone J. D. B., 761  
 Ferrario V. F., 365  
 Fischer D.-C., 63  
 Franquin J. C., 293  
 Fukushima K., 417  
 Fuller N., 845  
 Funakoshi M., 57  
 Furuyama S., 621

Gee L., 845  
 Gemmell E., 683  
 Gibson C. W., 235  
 Gilmour W. H., 601, 811  
 Giustiniani S., 293  
 Goodis H. E., 845  
 Greenfield Z., 277  
 Grieco D. A., 683  
 Griffiths G. S., 129  
 Grill V., 641  
 Grön M., 579  
 Grönroos L., 417

Haake S. K., 19  
 Hahn C.-L., 835

Hall K. I., 149  
 Hall R. C., 595, 783  
 Hanada K., 455, 779  
 Hand A. R., 161  
 Hara K., 113  
 Hassanali J., 673  
 Hayashizaki J., 665  
 Hellwig E., 243  
 Hempel J. D., 173  
 Henderson J. S., 271  
 Hendrickx E., 213  
 Heyeraas K. J., 407  
 Hiiemae K. M., 429  
 Himeno M., 305  
 Hobson R. S., 497  
 Homer K. A., 827  
 Horiuchi M., 185  
 Huang A., 665  
 Huang S., 665  
 Hughes B., 717  
 Humphreys-Beher M. G., 443

Ichikawa K., 251  
 Ichikawa T., 185  
 Ishihara K., 539  
 Ito R., 283  
 Itoh T., 225

Jacobs R., 213  
 Jacobsen E. B., 407  
 Jara L., 401  
 Johansson O., 137  
 Johnson D. A., 25  
 Johnson R. B., 271  
 Jung M., 181  
 Jung S., 181

Karg H., 625  
 Kato K., 283, 521  
 Kato T., 539  
 Kawaguchi T., 225  
 Kawasaki K., 505  
 Khoo S. P., 559  
 Kielbassa A. M., 243  
 King G. J., 717  
 Kitagawa Y., 283  
 Kiyama H., 197  
 Klimek J., 181  
 Kobayashi K., 251  
 Kobayashi S., 283  
 Koepsel R. R., 173  
 Kogner P., 869  
 Koidl U., 243  
 Komatsu K., 801  
 Kondo E., 197  
 Kopp S., 869  
 Kubota K., 57

Kuhara S., 481  
 Kumagai H., 251  
 Kurachi T., 465  
 Kurihara K., 547  
 Kurisu K., 773  
 Kuroda T., 787  
 Kyu T., 251

Langley M. S., 355  
 Larmas M. A., 299  
 Larsen M. J., 93, 475, 657  
 Larsen R., 329  
 Latchney L. R., 161  
 Lenarda R. D., 641  
 Lesot H., 385  
 Liu J., 429  
 Lloyd D., 783  
 Losso E. M., 83  
 Lozanoff S., 345  
 Lucas P. W., 1  
 Lundeberg T., 869  
 Lunt D. A., 601, 811  
 Luo W., 161  
 Luukko K., 189  
 Lyaruu D. M., 625

Macauley S. P., 443  
 Madapallimattam G., 527  
 Maeda T., 455, 773, 779  
 Maillou P., 323  
 Manabe Y., 283  
 Marchetti C., 755  
 Marsh P. D., 101  
 Marshall G. W. Jr., 845  
 Marshall S. J., 845  
 Martelli A. M., 641  
 Martinez J. R., 633  
 Matsui S., 393  
 Matsuki Y., 113  
 Matsumoto N., 185  
 Matsumoto S., 205  
 Matsumoto Y., 393  
 Matthews S. P., 595  
 Mättö J., 417  
 McNamara J. A. Jr., 345  
 Miani A. Jr., 365  
 Miguel J. C., 377  
 Minakuchi S., 57  
 Mitsui Y., 621  
 Miyawaki Y., 773  
 Momose T., 57  
 Moroi R., 305  
 Moxham B. J., 355  
 Müller K., 63  
 Muñoz P., 401  
 Murai S., 225

Nagamoto S.-Y., 283  
 Nagao H., 465  
 Nagao M., 251  
 Nagura H., 465  
 Nakagaki H., 521, 665  
 Nakajima T., 683  
 Nakanishi N., 547  
 Nakashima M., 481

Nam Y., 527  
 Nambiar S., 559  
 Narducci P., 641  
 Negoro M., 665  
 Nevis N., 423  
 Newman H. N., 101  
 Nicolau J., 83  
 Nishikawa J., 57  
 Nishimura Y., 305  
 Nishiura T., 305  
 Noble B., 649  
 Noda M., 185

Ochi K., 455, 773, 779  
 Ogawara M., 695  
 Ogura N., 265  
 Ohnuki Y., 505  
 Ohshima S., 801  
 Okiji T., 695  
 Okuda K., 539  
 Okumura H., 665  
 Ondarza A., 401  
 Onofre M. A., 333  
 Osborn J. W., 11  
 Otten E., 45  
 Overton B., 835  
 Oxford G. E., 443  
 Oyamada J., 283

Palmer J. B., 429  
 Paphangkorakit J., 11  
 Pearce E. I. F., 93, 475, 657, 665  
 Pearson S. K., 317, 377  
 Peretz B., 423  
 Pietilä K., 579  
 Pisanty S., 277  
 Poff A. M., 93  
 Prime S. S., 219  
 Prinz J. F., 1

Que B. G., 855

Raja A. M. H., 77  
 Ravnhol G., 657  
 Redlich M., 277  
 Reguzzoni M., 755  
 Robinson C., 521, 665  
 Rokutanda A., 283  
 Rosalen P. L., 317  
 Rose R. K., 595, 795  
 Rosenbloom J., 235, 489  
 Roth S., 63  
 Ruch J. V., 385

Saarela M., 417  
 Saeki Y., 505  
 Safavi K. E., 513  
 Saito H., 225  
 Saito I., 455  
 Saito T., 539  
 Samaranayake L. P., 735  
 Sandrucci M. A., 641  
 Sas R., 469  
 Sasaki Y., 57  
 Sato I., 251

Sato Y., 57  
 Sauk J. J., 235  
 Schaller H. G., 243  
 Schultz G. S., 443  
 Scutter S. D., 371  
 Şen B. H., 513  
 Senda M., 57  
 Senior B. W., 821  
 Seymour J., 683  
 Sforza C., 365  
 Shaw P. A., 743  
 Shi Y. Y., 727  
 Shida T., 197  
 Shoshan S., 277  
 Singer J. M., 83  
 Singh G. D., 345, 355  
 Slager G. E. C., 45  
 Smith A. J., 89, 219  
 Smith K. K., 587  
 Smith P., 423  
 Soma S., 205  
 Soory M., 255  
 Spaepen A., 213  
 Spångberg L. S. W., 513  
 Suda H., 695  
 Suda N., 787  
 Sugita N., 113  
 Sugiya H., 621  
 Suzuki T., 251

Taga R., 333  
 Takai N., 197  
 Takami Y., 521  
 Takano-Yamamoto T., 205  
 Takatsuka T., 539  
 Talarico G., 649  
 Tanaka F., 265  
 Tanaka T., 305  
 Tanimura A., 393  
 Tarnuzzer R. W., 443  
 Terada Y., 305  
 Theodorsson E., 869  
 Thi Thanh Ha N., 665  
 Thylstrup A., 329  
 Tohyama M., 197  
 Tojyo Y., 393  
 Toyono T., 481  
 Tsuge S., 521, 665  
 Türker K. S., 121, 371  
 Turner S. J., 795

Ueda Y., 197  
 Ueha T., 547

van Mele I., 213  
 van Nievelt A. F. H., 587  
 van Steenberghe D., 213  
 van Willigen J. D., 45  
 Verheust M., 213

Wade W., 89  
 Wakisaka S., 773, 779  
 Wang X., 19  
 Watanabe T., 57, 251  
 Watkins D. T., 569

Watson G. E., 161  
Watt M. E., 601, 811  
Wells J., 633  
White J. M., 845  
Wilton J. M. A., 129  
Wise G. E., 339, 855  
Wöltgens J. H. M., 625  
Wright J. T., 149  
  
Yaacob H. B., 559  
Yadav M., 559

Yamaguchi S., 801  
Yamane A., 801  
Yamauchi M., 149  
Yamaza T., 305  
Yamazaki K., 683, 787  
Yang J., 121, 371  
Yasuda N., 621  
Yee K., 845  
Yeh C-K., 25  
Yoshida Y., 197  
Yoshie H., 113

Youn S. H., 773, 779  
Yousef N., 869  
Yu W.-H. A., 743  
Yuan Z. A., 235  
  
Zee K.-Y., 735  
Zhang G. H., 633  
Zhao L., 339  
Zhou D., 717  
Zhu X., 417  
Zuo P., 25

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000

100-100000  
100-100000  
100-100000